1 □ APPROACH TO DIFFERENTIAL DIAGNOSIS

2 □ PURPOSES OF EVALUATION
   • Identify the presence of a problem
   • Describe the problem
   • Arrive at a differential diagnosis
   • Develop a prognosis
   • Plan intervention
   • Assess progress

3 □ EVALUATION ELEMENTS
   • Case History
   • Language evaluation
     • Single word retrieval (picture naming)
     • Single word comprehension
     • Repetition
     • Assessment of grammar
       • Comprehension
       • Expression
     • Reading and writing
   • Motor speech evaluation

4 □ CONFOUNDING FACTORS
   • When assessing language, be mindful of:
     • Motor speech disorders
     • Cognitive communicative deficits
     • Limb apraxia/ weakness
     • Visual and hearing acuity

5 □ OVERVIEW

6 □

7 □ VARIANTS OF PPA: ASSESSMENT TIPS
   • Logopenic variant
     • Anomia without loss of single word meaning
     • Poor sentence repetition
     • Comprehension deficits
     • Phonological errors are present
   • Semantic variant
     • Surface dyslexia/ dysgraphia
     • Loss of word meaning
   • Agrammatic variant
     • Loss of function words/ morphological markers
     • Assess spoken language AND writing

8 □ WHAT ARE WE DESCRIBING?
• The patient’s experience of the problem
• The family’s observation of the problem and their own experience with it
• The nature of the language impairment
  • What aspects of function are impaired?
  • Under what conditions?
  • With what severity?

9 □ PATIENT'S EXPERIENCE: INTERVIEW
• Why are you here?
• Difficulty understanding others? Under what conditions?
• Difficulty expressing yourself?
  • Trouble with words?
    • Finding the word
    • Saying the wrong word
      • Specifically ask about yes/no reversals (tauopathy)
    • Saying the right word incorrectly
  • Trouble with sentences?
    • Leaving words out
    • Saying words in the wrong order
• Are difficulties present in reading & writing? Spelling?
  • Specifically ask about texting and email

10 □ PATIENT AND FAMILY INSIGHT
May be obtained in parallel or separately
Description of the problem by patient and family is invaluable
• Diagnosis: nature and course of the problem
  • Complaints of difficulty with pronunciation or enunciation, word-finding difficulty, failing to recognize words
  • Gradual onset and worsening over time
• Treatment
  • Impact on work, personal, and social interactions
  • Effective strategies
  • Challenging contexts

11 □ PATIENT'S EXPERIENCE: PROMS
• Formal assessment tools

12 □ COMMUNICATION PARTICIPATION
Baylor, Yorkston, Eadie, Kim, Chung, and Amtmann, 2013

13 □
• Restrictions in day-to-day life are not directly related to the severity of language or speech problems

14 □
• Restrictions may worsen over time
• There does appear to be some stabilizing impact (on day-to-day activities, not severity of speech-language problems) of speech-language therapy
ASSESSING SPECIFIC LANGUAGE FUNCTIONS
- Auditory comprehension
- Spoken expression
- Discourse
- Reading
- Written language

ASSESSING AUDITORY COMPREHENSION

ASSESSING AUDITORY COMPREHENSION
- Assessing
  - Overall accuracy
  - Consistency
  - Level of complexity at which impairments are evident
  - Awareness of deficit
  - Cues that facilitate comprehension

AUDITORY COMPREHENSION
- Common tasks
  - Single word recognition
  - "Point to the..."
  - Reduce complexity by decreasing number of choices
  - Semantic relatedness

AUDITORY COMPREHENSION
Common task: Commands

AUDITORY COMPREHENSION
Common task: Yes-no questions

AUDITORY COMPREHENSION
Common task: Discourse
  - Contextual conversation
  - Contextual stories
  - Non-contextual stories

ASSESSING SPOKEN EXPRESSION

ASSESSING SPOKEN EXPRESSION
- Areas to assess
  - Repetition
  - Naming
  - Grammatic integrity
  - Verbal formulation
- Assessing
  - Overall accuracy (error type)
  - Consistency
  - Level of complexity at which impairments are evident
• Awareness of deficit
• Cues that facilitate expression

24  □ ASSESSING REPETITION

25  □ ASSESSING REPETITION
• Length (auditory memory)
• Phonetic complexity
• Grammatical complexity
• Cognitive flexibility

26  □ ASSESSING REPETITION

27  □ ASSESSING REPETITION

28  □ ASSESSING NAMING

29  □ ASSESSING NAMING
• Picture Naming
  • Highly familiar
  • Limited complexity

30  □ ASSESSING NAMING
• Picture Naming
  • Less familiar
  • Increasing complexity
  • Boston Naming Test

31  □ ASSESSING NAMING: CUEING

32  □ SYDNEY LANGUAGE BATTERY
• Assesses
  • Auditory recognition
  • Naming
  • Semantic association

33  □ SYDNEY LANGUAGE BATTERY

34  □ SYDNEY LANGUAGE BATTERY

35  □ SYDNEY LANGUAGE BATTERY

36  □ OTHER FACTORS THAT IMPACT LEXICAL/ SEMANTIC ABILITIES
  1  Negative impact
  2  • Increased length
    • Semantic similarity of choices
    • Fast presentation rate
    • Visual complexity
    • Increased cognitive demands
  3  Positive impact
  4  • Higher word frequency
    • Phonologic neighborhood density
• Distance of semantic neighbors
• Exemplar typicality
• Concreteness
• Salience
• Personal relevance

37  □  ASSESSING GRAMMATICAL INTEGRITY

38  □  ASSESSING GRAMMATICAL INTEGRITY – GROSS ERRORS
1. Spoken
   • Spontaneous expression
   • Picture description
   • Repetition
2. Written
   • Spontaneous writing
   • Picture description
   • Sentences to dictation

39  □

40  □  ASSESSING GRAMMATICAL INTEGRITY – SPECIFIC MORPHOSYNTACTIC FORMS
     (COMPREHENSION & EXPRESSION)
1. Commercial Tests
2. • Revised Token Test (McNeil & Prescott, 1978)
   • Syntactic Processing and Embedded Sentences subtests of the Boston Diagnostic Aphasia
     Examination (Goodglass et al., 2001)
   • Northwest Anagram Test (Weintraub et al., 2009)

41  □  TOKEN TEST

42  □  TOKEN TEST: AN EXAMPLE

43  □  TOKEN TEST: ANOTHER EXAMPLE

44  □  BOSTON DIAGNOSTIC APHASIA EXAMINATION
     SYNTACTIC PROCESSING

45  □  BOSTON DIAGNOSTIC APHASIA EXAMINATION
     EMBEDDED SENTENCES

46  □  NORTHWESTERN ANAGRAM TEST - NON WRITTEN OR SPOKEN PRODUCTION TASK

47  □  ASSESSING VERBAL FORMULATION

48  □  ASSESSING VERBAL FORMULATION
1. Defining single words
2. • Concrete
   • Robin
   • Island
   • Repair
   • Abstract
• Bargain
• Courage
• Inflatable

3 Explaining proverbs
4 • Don’t put all your eggs in one basket
   • Don’t count your chickens before they’re hatched
   • Don’t cry over spilled milk

49 □ ASSESSING READING

50 □ ASSESSING READING
1 • Oral reading (requires speech production)
   • Reading comprehension
2 • Linguistic processes
   • Graphemic decoding
   • Grapheme to phoneme conversion
   • Lexical semantic access
   • Morphosyntactic process
   • Discourse comprehension

51 □ ASSESSING READING
1 Tasks
2 • Single word recognition
   • Single word reading
   • Word – picture matching
   • Following directions
   • Longer items
3 Commercial Tools
4 • Reading Comprehension Battery for Aphasia (RCBA-2; LaPointe & Horner, 1998)
   • Subtests of PALPA (Kay et al, 1997)
   • Western Aphasia Battery Part 2

52 □ ASSESSING READING
• Word recognition
   • Point to the word as I say it
• Word reading
   • Read these words aloud

53 □ ASSESSING READING
• Word-Picture Matching

54 □ ASSESSING READING
1 Yes-No Questions
2 Multiple Choice Questions

55 □ ASSESSING READING
1 WAB-R Multiple Choice
2 WAB-R Reading Commands
ASSESSING READING (WAB-R PART 2)

1. Irregularly spelled real words
   (Surface dyslexia – lexical access)
   • Yacht
   • Guide
   • Ache
   • Debt
   • Knife
   • Bargain
   • Laughter
   • Biscuit
   • Magician
   • Courageous

2. Nonwords
   (Deep dyslexia – grapheme to phoneme conversion)
   • Fess
   • Munt
   • Deet
   • Dosh
   • Shab
   • Aponster
   • Poliket
   • Aldinger
   • Limponit
   • Globter

ASSESSING WRITING

1. Physical act of writing
   • Legibility
   • Keyboarding
   • Oral spelling
   • Alphabet board

2. Linguistic processes
   • Phoneme to grapheme coding
   • Lexical semantic access
   • Morphosyntactic process
   • Discourse formulation

ASSESSING WRITING

1. Letter Copying
   • T
   • S
   • R

2. Word Copying
• Was
• Monday

3. Spelling to dictation
• Man
• Rain
• Watch
• Yellow
• Business
• Yacht

60  ASSESSING WRITING
1  4. Spelling sentences to dictation
• The horse jumped over the fence.
• Some water is not good to drink
• He walked to work today.
• Please put the groceries in the refrigerator

2  5. Spontaneous writing
• Write several sentences describing what is happening in this picture

61  ASSESSING WRITING (WAB-R PART 2)

62  ASSESSING MOTOR SPEECH FUNCTIONING

63  TASKS FOR ASSESSING MOTOR SPEECH PROGRAMMING CAPABILITIES
• General conversational ability
• Imitation (sounds, words and sentences)
• Narrative picture description
• Automatic tasks (counting, days of the week, sentence completion)
• Singing a familiar song
• Reading aloud
• AMRs and SMRs
• Writing sample

64  ARTICULATORY ERROR SCORE
• “Repeat each of the following words 3 times.”
• Cat
• Catnip
• Catapult
• Catastrophe
• Harmonica
• Specific
• Snowman

65  ASSESSING FOR DIFFERENTIAL DIAGNOSIS

66  WHAT ARE WE DIFFERENTIATING?
• Aphasia versus
  • Apraxia of speech
• Dysarthria
• Nonaphasic cognitive communication deficits (NCCD)
  • Broader cognitive impairment associated with other dementias
  • Abulia

67 □ APHASIA VS AOS

1 Aphasia
2 • Comprehension impaired
   • Expression impaired in writing
   • Undistorted substitutions
3 AOS
4 • Comprehension unimpaired
   • Writing not impaired
   • Distorted substitutions

68 □ APHASIA VS DYSARTHRIA

1 Aphasia
2 • Comprehension impaired
   • Will have language impairments across modalities
3 Dysarthria
4 • Comprehension normal
   • Will perform normally on language tasks

69 □ APHASIA VS NCCD

1 Aphasia
2 • Phonemic and semantic paraphasias
   • Repetition disrupted by paraphasias & grammatical errors
   • Pragmatics a relative strength
3 NCCD
4 • Unrelated semantic paraphasias
   • Repetition disrupted by auditory memory and task confusion
   • Difficulty with figurative, abstract, indirect language

70 □ APHASIA VS NCCD

1 Aphasia
2 • Generally attempt responses
   • Can often give nonverbal responses
3 NCCD - abulia
4 • May not respond in any modality
   • May give fully formed responses with appropriate stimuli

71 □ AOS VS DYSARTHRIA

1 AOS
2 • Articulatory deficits
   • Consistent or inconsistent
   • Distorted substitutions and additions
   • Omissions
• Repetitions
• Prosodic deficits
  • Slow rate
  • Abnormal stress
  • Segmentation

3 Dysarthria
4 • Imprecise articulation (consistent or irregular)
  • Slow or rapid rate
  • Monopitch/ monoloudness
• Dysphonia
  • Strain
  • Breathiness
• Hypernasality or other resonance changes
• Physiologic slowness on oral motor exam
• Dysphagia

72 DIAGNOSIS WILL LIKELY RELY ON MULTIPLE TESTS
• Even something like the NAT does not distinguish between variants
  • It’s performance on that, relative to the other tests

73 WHAT ABOUT THE WAB?

74 RESEARCH MEASURES
• Conversational, discourse analysis
• AI/ machine learning
• Articulatory and prosodic metrics (acoustics)

75 Assessment of Aphasia
    Identifying Complicating Conditions

76 POOR PERFORMANCE ON LANGUAGE TASKS MAY REFLECT NON-LANGUAGE DEFICITS

77 SCREENING FOR COMPLICATING CONDITIONS SENSORY AND PERCEPTUAL DEFICITS
1 Hearing
2 • Sensory
  • Presbycusis
  • Tinnitus
  • Perceptual
  • Auditory agnosia

3 Vision
4 • Sensory
  • Field cuts
  • Diplopia
  • Presbyopia
• Cataracts
• Macular regeneration
• Perceptual
• Neglect
• Visual agnosia
• Color blindness

AUDITORY BATTERY FOR AGNOSIA

AUDITORY AGNOSIA

Early perceptual coding

1. DOES THE PITCH CHANGE OR STAY THE SAME?
2. DOES THE PITCH CHANGE OR STAY THE SAME?
3. DOES THE PITCH INCREASE OR DECREASE?
4. ARE THE TWO NOTES THE SAME OR DIFFERENT?
5. ARE THE TWO NOTES THE SAME OR DIFFERENT?
6. ARE THE TWO NOTES THE SAME OR DIFFERENT?

Perceptual representation

7. IS THIS SOUND MADE BY SOMETHING BIG OR SMALL?
8. IS THIS SOUND MADE BY SOMETHING BIG OR SMALL?
9. IS THIS SOUND MADE BY SOMETHING BIG OR SMALL?
10. IS THIS SOUND MADE BY SOMETHING BIG OR SMALL?

Sound naming

11. PLEASE NAME THIS SOUND
12. PLEASE NAME THIS SOUND
13. PLEASE NAME THIS SOUND
14. PLEASE NAME THIS SOUND
15. PLEASE NAME THIS SOUND

Sound-word matching

16. PLEASE PICK THE WORD THAT MATCHES THE SOUND
17. PLEASE PICK THE WORD THAT MATCHES THE SOUND
18. PLEASE PICK THE WORD THAT MATCHES THE SOUND
19. PLEASE PICK THE WORD THAT MATCHES THE SOUND
20. PLEASE PICK THE WORD THAT MATCHES THE SOUND
104 Sound-picture matching

105 21. WHAT PICTURE FITS WITH THE SOUND?

106 22. WHAT PICTURE FITS WITH THE SOUND?

107 23. WHAT PICTURE FITS WITH THE SOUND?

108 24. WHAT PICTURE FITS WITH THE SOUND?

109 25. WHAT PICTURE FITS WITH THE SOUND?

110 26. WHAT PICTURE FITS WITH THE SOUND?

111 27. WHAT PICTURE FITS WITH THE SOUND?

112 28. WHAT PICTURE FITS WITH THE SOUND?

113 29. WHAT PICTURE FITS WITH THE SOUND?

114 30. WHAT PICTURE FITS WITH THE SOUND?

115 VISUAL AGNOSIA

116 MAYO PCA BATTERY

ASSESSMENT OF COMPLEX VISUAL AND LEXICAL PROCESSING

117 ORDER OF EXAMINATION

VISUAL ACUITY (NEAR CARD)
VISUAL FIELDS TO CONFRONTATION
EXTRAOCULAR MOVEMENTS
  SACCADIES, PURSUITS, FINGER TO OBJECT
VISUOCONSTRUCTION TASKS
  CLOCK, NECKER CUBE, REY-O
AUDITORY VERBAL RECOGNITION
COLOR PERCEPTION AND NAMING
COLOR DISCRIMINATION
ISHIHARA PLATES
COLOR ASSOCIATIONS
OBJECT RECOGNITION AND NAMING
LETTER RECOGNITION AND NAMING
WORD RECOGNITION AND NAMING
READING/COLOR DISCRIMINATION
PARAGRAPH READING
SIMULTANAGNOSIA ASSESSMENT
FACE RECOGNITION AND NAMING

118 AUDITORY WORD RECOGNITION

  • Ask the patient to describe what the words mean or represent:
    • bowl
    • couch
    • island
• canal
• chess
• ocean
• pyramid
• scissors
• cello
• yacht

TESTING OF COLOR VISION, PERCEPTION, AND NAMING

COLOR NAMING

1 A.

2 C.

3 D.

1 A.

2 C.

3 D.

1 A.
A.
B. 
C. 
D.

A.
B. 
C. 
D.

A.
B. 
C. 
D.

ISIHARA PLATES

WHAT IS THE COLOR OF: THE SKY

WHAT IS THE COLOR OF: BLOOD

WHAT IS THE COLOR OF: A TANGERINE

WHAT IS THE COLOR OF: GRASS

WHAT IS THE COLOR OF:
A BANANA

WHAT IS THE COLOR OF:
A GRAPE

OBJECT RECOGNITION
AND NAMING
Another version of Famous Faces
Who do you recognize and what is their name?

SCREENING FOR COMPLICATING CONDITIONS
MOTORIC DEFICITS

1. Apraxia of Speech
2. Articulatory deficits
   • Consistent or inconsistent
   • Distorted substitutions and additions
   • Omissions
   • Repetitions
3. Prosodic deficits
   • Slow rate
   • Abnormal stress
   • Segmentation
4. Dysarthria
5. Dysphonia
• Strain
• Breathiness
• Hypernasality
• Imprecise articulation (consistent or irregular)
• Slow or rapid rate
• Monopitch/monoloudness
• Physiologic slowness on oral motor exam
• Dysphagia

226 □ SCREENING FOR OTHER COMPLICATING MOTORIC DEFICITS

1. Limb (or "domain general") apraxia
   • May follow instructions involving the face or trunk but not the digits or limbs
     • May be unable to imitate
     • May be unable to pantomime how to perform functional tasks
   • WAB-R Part 2
   Slowness or rigidity

227 □ NEUROIMAGING IN PPA

FURTHER SUPPORTIVE EVIDENCE

228 □ PATHOPHYSIOLOGY OF PPA

• FTLD
• Tauopathy
• TDP
• AD (tau and amyloid)

229 □ IMAGING

• PET Scans
  • FDG***
    • PiB (test for Alzheimer's disease proteins)
    • Tau (not a clinically available test)
• MRI
  • May be visually read as normal, particularly early in the disease